



A FEW WORDS ON TAMPICO AND ITS MARSHES.

GENERAL ETIOLOGY.

THE dominion of marshes can be called universal. Thus it seems that the paludal germ finds every where the necessary conditions for its life and growth, those regions where it is not found being quite exceptional. In our country, according to Dr. Ruiz, it is the dominating endemic, more especially in the extensive stretch of low lands bathed by the waters of the Gulf of Mexico, and showing itself also, though with less intensity, in many towns of the central plateau, in spite of this being more than a 1,000 metres above the level of the sea and under the climatic conditions of cold climates.

Heat, humidity and vegetation are the requisites for the development of miasma or at least for its vigorous growth, as can be seen in all that part of the country, called the hot country, where, in effect, to a tropical temperature are united an excessive dampness of air, a soil of alluvion and marsh and exuberant vegetation.

Let us be permitted to insist on the disputed question of marshes, for even accepting the telluric theory, the pathogenic influence of standing water, now forming extensive pools of miry water, now infiltrating the soil, and more or less exposed to evaporation. The result of secular observation is, in ef-

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fect, that the most paludal places, those, where the germ prospers in all its strength, are essentially marshy, formed of low, damp lands; the west coast of Africa, from Senegal to Cape Lopez; Lower Egypt, with the valley of the Nile; in America, the States of Texas, the Maritime zone of Louisiana, the marshy plain of Tazro and the Mississipi, the bay of Mobile. In Mexico the paludal zone of the hot country, formed of sand and feverish marshes; Tampico with its lakes with marshy shores, its low lands, submerged by the overflow of the rivers; Veracruz with its pools and morasses of Tejería, and its low damp lands to Soledad. Finally, as an example of paludous soil we will cite Sologne, in France, distinguished for its marshy soil and for its notorious unhealthiness; and also Dombes. With its reseirvoirs covering a space of 2,000 hectares, where the inhabitants of the convent of La Frappe are changed every four years, victims to the fever and their sublime abnegation.

TOPOGRAPHY OF TAMPICO.

The town is situated about 6 or 8 metres above the level of the sea, in its most central part, an the rest is on the sea level; it gives a census of 8,046 inhabitants, including the outskirts, or it might be called 9,000 to be nearer the truth. It is on an alluvial soil with a clayey, impermeable sub-soil. Its streets are straight, running from N. N. E. to S. S. W. and from E. S. E. to W. N. W.; its houses, of one story, are spacious and, thanks to the width of the streets, constantly receive the rays of the sun, which dispel the moisture and make rheumatic affections less frequent, being so numerous in the great centres of towns. Its hygienic conditions are of little interest; the houses have large open spaces in the centre and good ventilation, and also the detestable system of permanent fosses, which, however, is compulsory from the absolute want of drainage.

Rain water, collected in tanks, is what is used in the centre of the town and it possesses all the character of a good

drinking water: purity, lightness and no taste or smell whatever; and the excellent construction of the tanks must be taken into consideration, their impermeable walls of stone and roman cement, which prevents any contamination from the earth; and the precautions taken in collecting the water and the periodical cleaning of the cistern and channels to prevent any infection from the outside. The other part of the city is supplied with water from the river Tamen from a great distance, it is also drinkable and very clear, but without the lightness and limpidness of the rain water.

With regard to the topographic conditions we will point out the checking of the waters, forming marshy pools in the streets and court yards of the houses or in fields in the neighbourhood of the lake "Carpintero;" this is most noticeable in the high tides and in the rainy season. They are to be found on the margin of the said lake, from "Cortadura" to the extreme north of the town. All that belt of low lands, alternatively submerged and marshy is, to our way of thinking, one of the principal paludous focus, which surrounds the city. On the west side another great stretch of land is watered by the river "Tamesi," and suffers, at the same season, inundations, which place it in the same deplorable condition that we have shown, thus powerfully contributing to the notorious unhealthiness of the town. Finally, on the S. and S. E. there are still, though in smaller proportions, places at times inundated, of rich vegetation, that contribute with the others, to make Tampico one of the first, if not the first, of the palustral focus of our soil.

CLIMATE AND METEOROLOGY.

Tampico is situated on the northern extreme of the torrid zone, and in that part of the shore called the hot country and characterized by its low level, by its sandy and alluvial soil, by its exuberant vegetation and by its extensive lakes and marshes. The year may be divided into two seasons: that of the rains and that of the northern winds; the first from May to September, and the second from that time to April or May.

The first season does not present such marked limits and could well be sub-divided into two epochs: one of slight and the other of heavy rains, separated by the hottest and driest months. The season of north winds is always more exact: it begins to show itself from September and becomes well marked from October to the rainy season.

WINDS.

During the winter, part of Autumn and Spring, the dominating wind is N. N. E. preceded, by the South and S. E. winds, with a decided lowering of the barometer, excessive humidity in the air even to saturation in the mornings and nights, and dense fogs from the South and S. W. In the warm season breezes come from the E. and S. E. during the day, W. and S. W. land winds at night and early hours of the morning.

TEMPERATURE.

Summary of observations of temperature in the year 1891 which gives a sufficiently exact idea of the usual temperature:

| 1st. third of the year medium temperatures. | | | 2nd. third of the year medium temperatures. | | | 3rd. third of the year medium temperatures. | | |
|---|--------------|--------------|---|--------------|--------------|--|--------------|--------------|
| Me- dium | Ma- ximum | Mi- nimum | Me- dium | Ma- ximum | Mi- nimum | Me- dium | Ma- ximum | Mi- nimum |
| 20.9 | 24.5 | 17.4 | 27.0 | 30.6 | 24.1 | 22.6 | 26.7 | 19.2 |
| Season of north winds | | | Season of heat and rain | | | End of rains and commencement of N. winds. . . . | | |

Absolute maximum of the year: 33.3 (July.)

Maximum: 7.7 (November.)

GENERAL AND PALUSTRAL MORTALITY.

Population, according to the last census, 8,046 inhabitants; today, owing to the railways and the works of the canalization of the bar, it probably reaches 9,000, so that on this number are based our calculations.

Year 1890.

Deaths in all the year..... 460

Do by railway accidents, wounds, &c..... 20

Annual mortality per 1,000..... 47.1

Deaths from paludous..... 150

Year 1891.

Deaths in the whole year..... 623

Do by railway accidents, wounds, &c.... 22

Annual mortality per 1,000..... 66.7

Deaths from paludous fevers..... 212

Mortality per 1,000..... 23.5

The noticeable increase in the number of deaths compared with previous years is due to the epidemic of influenza in May, and also to the floating population for reasons indicated.

TABLE showing the principal causes of the deaths that took place in 1891.

| MONTHS. | Palustral fevers | Pneumonia influenza | Tu- berculosis | Dysentery and enteritis | Hepatitis | Palustral cachexy |
|----------------|---------------------|------------------------|-------------------|----------------------------|-----------|----------------------|
| January..... | 8 | 7 | 6 | 2 | 2 | 2 |
| February..... | 2 | 6 | 2 | 1 | .. | .. |
| March..... | 8 | 2 | 5 | 1 | 1 | 1 |
| April..... | 1 | 8 | 4 | 1 | .. | 2 |
| May..... | 19 | 39 | 11 | 4 | 1 | 1 |
| June..... | 11 | 9 | 9 | 1 | 3 | 3 |
| July..... | 16 | 9 | 7 | 5 | .. | 3 |
| August..... | 29 | 4 | 4 | 4 | 1 | 2 |
| September..... | 29 | 4 | 3 | 8 | 2 | 1 |
| October..... | 23 | 4 | 2 | 9 | 3 | 3 |
| November..... | 20 | 7 | 5 | 5 | 2 | 4 |
| December..... | 21 | 10 | 4 | 6 | 3 | 3 |
| Totales.... | 187 | 109 | 62 | 47 | 18 | 25 |

Such a high rate of mortality occasioned by malaria is observed principally in infancy, from the ages of 3 months to two years, owing to a predisposition on account of cerebral complications at that age, and to the little use of quinine, because the poorer classes have a rooted prejudice against the only specific of paludous fever, which is shared by many people of a higher social grade.

PALUSTRAL MORBIDITY.

There are no words to express it, nor figures to count it: those who have the good fortune to escape the malarial infection are noted exceptions. Sooner or later one must suffer its attacks, until one is acclimatized; it shows itself, however, with more intensity, in recent arrivals, especially if they come in numbers, like troops or workmen.

Number of patients from paludous fever.

Entered at the Military Hospital in 1887.

(Endemic epidemic on the arrival of the 14th Batallion.)

| | |
|----------------|-----|
| January..... | 65 |
| February..... | 58 |
| March..... | 108 |
| April..... | 112 |
| May..... | 154 |
| June..... | 472 |
| July..... | 536 |
| August..... | 620 |
| September..... | 26 |
| October..... | 35 |
| November..... | 28 |
| December..... | 17 |

Total..... 2421

TABLE showing the number of patients from paludous fevers entered at the Civil hospital in 1891.

| MONTHS | Intermittent | Remittent | Pernicious | Anemia and cachexy |
|----------------|--------------|-----------|------------|--------------------|
| January..... | 21 | 8 | 1 | 3 |
| February..... | 15 | „ | 2 | „ |
| March..... | 14 | 2 | 1 | „ |
| April..... | 19 | 1 | 1 | 2 |
| May..... | 22 | 1 | 2 | 1 |
| June..... | 101 | 2 | 3 | 3 |
| July..... | 130 | 11 | 1 | 1 |
| August..... | 134 | 6 | 4 | 2 |
| September..... | 122 | 3 | 1 | 3 |
| October..... | 80 | 1 | 7 | 6 |
| November..... | 57 | 1 | 2 | 5 |
| December..... | 53 | „ | 2 | 1 |
| Totales..... | 768 | 36 | 27 | 27 |

FORMS.

Palustral endemic suffers here, as is the rule in other countries, recrudescences in its manifestations, generally estival, taking in such case an epidemic character. The first rains of the Spring falling on a dry, broken soil, are rapidly absorbed, thus preparing the land for the elaboration of the germ; it is, one can say, the necessary watering for the prosperity of the mysterious flower of paludous fevers. The heavy showers at the beginning of summer, followed by a tropical temperature evaporated by the rains, put the soil in the best condition for the endemic epidemic so common in this season. Of the multiple forms affected by malaria, the daily *intermittent fever* is the most frequent showing itself with its three

different periods: chills, fever and perspiration, the two last constant, and the first, if present, passed over on account of being little noticed.

Tertian fever is seen much more seldom than the above form, it is always accompanied by prolonged chills, the stage of perspiration is more constant and pronounced, and is considered an indication of advanced poisoning, as it shows itself generally in those, who, at some more or less remote period, have suffered other attacks of malaria.

Less known still, we, only having notes of four cases, is the *quartan*, which, as is well known, is more frequent in temperate or cold climates.

Besides these regular manifestations there are the *pernici- cious* fevers which we believe the hæmatozoon being the same, are the former forms, modified by the conditions of the soil or are individual forms according their development. And it is easy to think so, seeing the extreme gravity of paludous fever in early childhood, an access of simple intermittent terminating in death, and bearing the character of cerebral pernicious meningitis. It is evident that the nervous susceptibility usual at that tender age, has been the cause of such malignity; and we believe the same in serious cases of adults, always depending on the soil where the germ was sown, thus corroborating once more the true axiom of Peter "*chacun fait sa maladie à sa façon*." Of all these pernicious manifestations, the first, from its frequency, is the *cerebral* with apoplectic ictus and all the symptomatic accompaniment of a very intense congestion. More rare are the *delirious*, the *coleric*, the *algid* and the *diaphoretic*, and they do not offer any symptom that is not already known or that merits any special notice.

In the acute forms, sudden in their appearance and of short duration, we find the extreme group of the *pseudo-continual* and palustral *remittent*; we will not insist on the hybrid remittent or malarial typhus which lasts two or three weeks, and is not influenced by quinine; a form not very common and some-times ceding to balneotherapy.

Remittent or rather pseudo-continual that we most frequently meet with, is *continual* of three to five days an ephemeral species peculiar to temperate climates, which would be clinically difficult to classify, if it were not for two characters of supreme importance: the presence of hæmatozoon and the relapse under the form of free intermittent. We do not advise the use of quinine, which does not affect the ephemeral, and leaves in the mind the doubt whether the fever we are curing would be cured *in spite of the quinine* it being an ephemeral fever.

The remittent that after the latter is most commonly observed, is the one of seven days, with the sole symptom of hypersthenia, sometimes, but not constantly, a splenic pain, vomiting and cephalalgia. And the same the remittent fever of two or three weeks, without indications of localization, and characterized only by the return of the fever. Quinine in all these prolonged pyrexias does not show itself the heroic remedy as in all other forms; its administration continued as far as to produce quinism does not appear to arrest the progress of the illness, although it has a favorable influence in the final result, as we have observed on seeing these fevers badly treated or neglected.

The bilious remittent with the jaundice that accompanies it, and with the characteristic defervescence after the first day, is less common, showing itself with persistent bilious vomiting, and rather under the form of a gastric febrile affection.

LARVAL FEVERS.

Proliferous manifestations with little or no febrile reaction in wild forms, are truly hypertonic in serious cases.

NEURALGIC FEVERS.

The most common, above all the supraorbital. Sometimes it follows a simple intermittent or precedes it, accompanied then by a light febrile ascension and sediment in the urine, it cedes admirably to quinine in connection with morphine.

CONGESTIVE FEVERS.

Fluxions of the mucosæ: coryza, pharyngitis, conjunctivitis. A type of these forms is the *phlyctenular intermittent conjunctivitis* as a most notable case that we have observed: ardor and intense injection of the conjunctival zone where the phlyctœna forms: spontaneous and gradual disappearance of all the symptoms with the same rapidity with which they appeared.

PNEUMONIC FEVERS.

Does intermittent pneumonia really exist? Tartenson considers pneumonia is *always* of palustral origin; showing itself, according to him, by the increased mortality, which is attributed to pneumonia, a mild illness (?) more likely due to larval pneumonic fever, as is besides proved by the efficacy of quinine in serious cases. Such an idea makes one at once believe that larval pneumonic fever shows itself like a palustral manifestation even more dangerous than the pernicious, forms, in places where these are unknown and which are not propitious to the growth of malaria.

We believe, for our part, that the palustral pneumonia has no separate existence like common pneumonia, which is an infectious and epidemic disease of determined duration, being rather an *intermittent fever* with *pulmonary manifestations*, as it could have been cerebral or intestinal; it is «an intermittent fever associated with an organic determination that it has under its dependence» (Jaccond) «or an intermittent fever accompanied by pneumonic» (Grasset.) As to the pneumonia of those affected of palustral cachexy it does not give room for discussion, it is ephemeral pneumonia well developed in worn out constitutions, which offer well prepared ground for the growth of the pathogenic germ.

PALUSTRAL CACHEXY.

Among the lowest classes where, united to deplorable conditions of life, there is an invincible repugnance to quin-

ine, and it is not strange that palustral poisoning should reach to its last point: anæmia, œdema, diarrhea and enormous splenic inflations.

Chronic diarrhea or palustral enteritis is the most frequent cause of death among these unfortunates; it is common to find in the corpse, beside intestinal splenic wounds, cirrhotic degeneracies of the liver and kidneys.

Palustral anæmia, without splenic hypertrophy characterized by the pigmentous color of the skin, by the apathy, physical as well as intellectual, and by a badly characterized union of symptoms, presented with intermittance and precursors very often of in open manifestation, it can be seen in the greater number of the inhabitants, and constitutes latent paludous fever the most general form of palustral poisoning.

Tampico, 8th October 1892.

A. MUTIENZO.

